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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/600,850

06/20/2003

Ayumu Oda

59408 (49321)

6007

21874

7590

06/26/2006

EDWARDS & ANGELL, LLP

P.O. BOX 55874

BOSTON, MA 02205

EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/600,850

Applicant(s)

ODA ET AL.

Examiner

Hai C. Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-13 and 15-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-13 and 15-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

FINAL REJECTION

Response to Amendment

1. The drawings as originally filed on 06/20/03 have been acceptable and confirmed during the issuance of the first office action dated 06/28/05 and placed of record in the file. It is noted that there is no need to reconfirm the acceptance of the original drawings since there is no amendment to the drawings being filed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 7-10, 12-13, 16, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (JP 62-166372) in view of Deguchi et al. (U.S. 6,061,526).

Inoue et al., an acknowledged prior art, discloses a focusing method for an optical writing unit (LED array unit 14) extending from a first end to a second end transversely across a surface of an image-carrying member (photosensitive body 10) (see Figs. 1 and 6-7), the method comprising a pattern image forming process for forming a test pattern by projecting light modulated by image data of the test pattern

(e.g., font pattern) (Fig. 5) from an array of multiple light-emitting elements (LED array unit 14) corresponding to pixels arranged along the main scanning direction over an image forming area onto said surface of said image-carrying member, converting an electrostatic latent image formed on said surface of said image-carrying member into a visible toner image, and transferring said visible toner image from said surface of said image-carrying member onto a printing medium (the processes of developing the latent image representing the test pattern image on the photosensitive body and transferring the visible toner image onto a recording medium are inherent functions of any electrophotographic printer), and a position adjustment process (e.g., sets of adjustment screws 20a and 20b provided at the respective ends of the LED array unit) for separately adjusting the position of the said ends of said optical writing unit in such a manner that said optical writing unit is positioned at a proper distance from, and parallel to, said surface of said image-carrying member (e.g., adjusting the angle of offset θ of the focal point line representing the inclination of the LED array unit with respect to the photosensitive body) (Fig. 8) based on density levels of end portions of each of said multiple pattern elements of said test pattern formed on said printing medium and based upon the amount of adjustment indicated by said density levels of said test pattern formed on said printing medium (each of the font pattern used for the focus adjustment of the LED array unit being based on the type and length of the LED array unit as well as the height adjustment of the end screws representing the amount of the focus adjustment) (see the provided partial English translation).

With regard to claims 10 and 21, Inoue et al. also teaches a memory for storing data on the test pattern (memory of the personal computer 70).

However, Inoue et al. fails to teach the test pattern including uninterrupted multiple pattern elements with gradually varying density levels, the position adjustment process being based on the density levels of the multiple pattern elements of the test pattern formed on the printing medium, the test pattern being binary pattern elements, the adjustment quantity information denoting the amount of adjustment corresponding to the density levels of the test pattern, and an image reader.

Deguchi et al. discloses an image recoding apparatus including a focus position control device for adjusting the focus position of the printhead based on the density test pattern that includes uninterrupted multiple test patterns of gradually varying density levels arranged in the main scanning direction (Fig. 19), wherein the position/focus adjustment process of the printhead is based on the density levels of the test pattern (col. 18, lines 8-14) (col. 19, lines 15-21). Deguchi et al. further teaches the test pattern having 256 density levels provided by an 8-bit image data, using a CCD (140) for reading the test pattern, the ends of the exposure head (220) being affixed to an adjustment mechanism, i.e., spacer (202), screw mechanism (203) or wedge (204) (Figs. 15a-15c), a memory for storing the test pattern (LUT data for LUT gradation conversion processing).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the test pattern in the device of Inoue et al. to include uninterrupted test patterns and to provide an image reader as taught by Deguchi

et al. The motivation for doing so would have been to provide an accurate focus adjustment mechanism according to the linearly varying density levels.

Inoue et al. further teaches:

- an assembly process for installing the optical writing unit at an offset position closer to or farther away from the image-carrying member than a position where the focal point of the light emitted from the individual light-emitting elements is expected to coincide with the surface of the image-carrying member before execution of said pattern image forming process (Figs. 6 and 7),
- said assembly process is performed when both ends of the optical writing unit at extremities of the image forming area in the main scanning direction are affixed to an adjustment mechanism (e.g., using adjustment screws 20a and 20b provided at the respective ends of the LED array unit 14),
- said adjustment mechanism includes an input section for accepting an input of the amount of adjustment determined with reference to an image of the test pattern formed on a printing medium by the image forming operation based on the data stored in the memory (the test pattern stored in a memory of the personal computer 70 and fed to the printing unit).

4. Claims 3, 5-6, 15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. in view of Deguchi et al., as applied to claims 1 and 10 above, and further in view of Ohnishi et al. (U.S. 6,181,356).

Inoue et al. as modified by Deguchi et al., discloses all the basic limitations of the claimed invention including controlling the light-emitting time or power of the individual light-emitting elements according to the density of the test pattern (col. 14, lines 15-28) (col. 16, lines 31-40), but except for the density levels being determined by the diameter of individual dots.

However, it is old and well known in the art that the diameter of the dot image varies in accordance with the varying emission time of the laser in forming image pattern of different densities as evidenced by Ohnishi et al. at col. 15, lines 1-8.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to vary the diameter of the individual dots in the device of Inoue et al. as taught by Ohnishi et al. for the purpose of varying the density level of the test pattern since Ohnishi et al. teaches this to be well known in the art of the direct relationship between the emission time of the light source, the dot diameter and the different density levels of the image pattern.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. in view of Deguchi et al., as applied to claim 10 above, and further in view of Imakawa (U.S. 5,231,280).

Inoue et al., as modified by Deguchi et al., discloses all the basic limitations of the claimed invention except for the controlled actuator.

Imakawa discloses in Fig. 6 a focusing error detection apparatus using a piezoelectric element (13) to adjust the position of the laser source (11) so as to focus the laser beam on the surface to be scanned.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the controlled piezoelectric element in the focus adjustment device of Inoue et al. as taught by Imakawa. The motivation for doing so would have been to constantly and automatically adjust the focus of the light beam on the surface to be scanned to obtain a high quality image.

Response to Arguments

6. Applicant's arguments filed 04/07/06 have been fully considered but they are not persuasive with regard to the teaching of Deguchi et al. The applicants argue that "the density measurements represented in the Deguchi Fig. 19 are not related to the focus adjustment means depicted in Deguchi's Figs. 15A-16". The examiner respectfully disagrees. The test pattern in Deguchi is used for adjusting different parameters of the printing device, which include the focus adjustment of the exposure heads (col. 19, lines 15-21). The parallelism of the exposure heads as well as the intensity control of the exposure heads are also needed such that the test patterns are accurately imaged on the medium to prevent misregistration and unevenness of the image density.

Conclusion

7. Applicant's amendment, which changed the scope of the base claims, necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM
PRIMARY EXAMINER

June 22, 2006